

continued to fall at 3 percent per year, while synthetic textile products fell at an average annual rate of less than 1 percent.

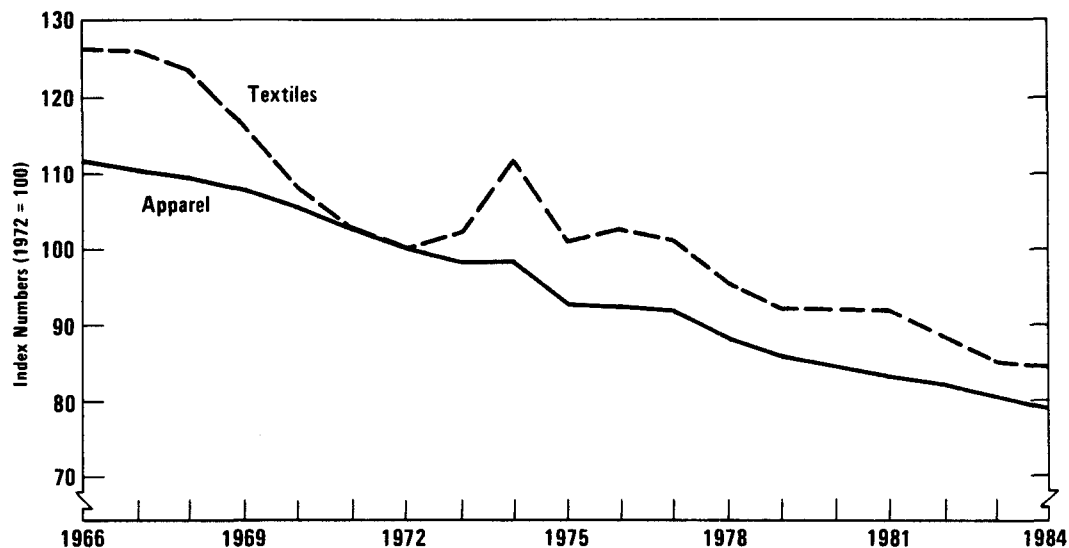
### Profits, Investment, and Employment

Given the slow growth in output and the decline in domestic prices, profits of domestic manufacturers probably did not increase very much as a result of the MFA. This lack of increase was certainly the case for the textile industry--profits remained relatively constant throughout the 1970s and 1980s, though they varied with the business cycle (see Table 3). Through virtually the entire period, the industry's return on stockholders' equity was below that of all manufacturing. On the other hand, despite the increase in imports, the textile industry's profits as a percent of stockholders' equity improved somewhat during the 1980s; in 1983, it was more profitable than all manufacturing. There is no comparable data for apparel manufacturers.

Ironically, investment in the textile industry, which is substantially more capital intensive than apparel, declined in real terms after 1972, when the agreements limiting imports of synthetic textiles began to take effect.

Figure 6.

### Real Price of Textile Products



SOURCE: Congressional Budget Office based on data supplied by the Bureau of Labor Statistics, Department of Labor, and American Textile Manufacturers Institute.

NOTE: Adjusted by GNP Deflator

TABLE 3. REAL PROFITS AND INVESTMENT  
(In millions of 1972 dollars)

Year	After-Tax Profits	Textiles	Apparel
		Capital Expenditures	Capital Expenditures
1960	478.89	474.67	121.54
1961	403.87	463.87	114.67
1962	501.35	533.07	138.93
1963	493.93	533.56	179.43
1964	696.72	691.91	168.75
1965	933.30	831.23	225.79
1966	914.54	1,155.94	268.11
1967	683.03	927.27	263.47
1968	792.34	836.69	323.72
1969	715.52	978.45	358.11
1970	451.61	886.93	327.61
1971	581.19	909.07	350.17
1972	659.00	1,127.40	363.40
1973	782.03	1,059.95	366.34
1974	677.79	1,016.16	340.11
1975	325.15	792.43	302.57
1976	609.04	821.75	319.40
1977	590.50	873.62	326.10
1978	779.15	901.54	341.71
1979	819.36	813.43	320.52
1980	555.99	834.16	340.66
1981	591.51	881.80	330.27
1982	410.36	756.92	324.57
1983	743.58	720.80	279.02
1984	731.77	859.33	375.96

SOURCES: Congressional Budget Office and Department of Commerce.

NOTE: Adjusted by GNP Deflator.

Capital expenditures in the apparel industry declined after 1973, although the subsequent fall was not as large as in the textile industry. Investment in the apparel industry surpassed the 1973 level for the first time in 1984.

Protection was probably not a significant factor in either the increased investment that took place during the 1960s or the decline in the 1970s. Starting in the early 1960s, innovations in the production of synthetic fibers led to the introduction of new textile machinery. The production of these new fibers meant that downstream equipment--for example, weaving and knitting mills--could be redesigned to take advantage of the properties of the new materials, most notably their greater uniformity.<sup>22/</sup> Second, the demand for synthetic textiles--not only for use in apparel but also for industrial and home furnishings uses--grew quite rapidly. Manufacturers thus had a strong incentive to increase production capacity of synthetic textile products. Since most of the protection during this period was for cotton textiles, whereas most of the new investment was in synthetics, it seems implausible to attribute much of the investment boom to protection.

Although the restraints did not lead to increased investment, gains in productivity, relative to all manufacturers, improved after the restraints were extended to include synthetic products in the early 1970s. Between 1963 and 1972, textile productivity increased at an average annual rate of 4 percent, apparel productivity by 2.5 percent, and the productivity of all manufacturing by 2.6 percent. Between 1972 and 1982, increases in productivity were 3.7 percent, 2.1 percent, and 1.7 percent, respectively.<sup>23/</sup>

Given the decline in output and the increased productivity of workers, employment has contracted in both the textile and apparel industries. The declines in employment, however, have been moderate. Between 1972 and 1984, total employment in the apparel industry had fallen at an annual rate of less than 1 percent a year; in 1984 apparel firms employed over 1.2 million people. During the same period, employment fell at an average rate of 2 percent per year in the textile industry, which had 737,000 employees in

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22. For the results of engineering studies on the rapid pace of technical change on various types of machinery, see Organization for Economic Cooperation and Development, *Textile and Clothing Industries: Structural Problems and Policies in OECD Countries* (Paris: OECD, 1983), p. 19. The report also concludes that technical progress was much more rapid in synthetics than in cotton products.

23. Productivity is measured as output per man-hour and is based on unpublished data from the Bureau of Labor Statistics of the Department of Labor.

1984. The decline in employment in both industries between 1980 and 1984 has been sharper than it has been in the earlier period. It declined an average annual rate of 1.2 percent and 3 percent in the apparel and textile industries, respectively. Throughout this period, real wages did not increase appreciably in either industry, and they remain among the lowest of any manufacturing sector of the economy.

While employment in both industries has declined somewhat, imports have not caused an abrupt contraction in the industry. Although many firms have exited, existing firms have expanded and other firms, most notably apparel manufacturers, have entered. Firms in the textile and apparel industries face competition from domestic as well as foreign producers. Indeed, domestic competition and the shift of domestic resources among regions of the country have undoubtedly been as significant as foreign competition in causing dislocations in the industry. For example, during the 1950s, when the share of imports was quite low, textile production shifted from New England to the Southeast United States, where wages were significantly lower. In unconcentrated and competitive industries like textiles and apparel, such "dislocations" are to be expected even without import competition.

## CONCLUSION

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The textile and apparel industries have had some type of quantitative restrictions on imports for over 30 years, far longer than any other domestic industry. Given the labor-intensive production process, it is clear that in producing many products, most notably apparel, domestic firms are at a comparative disadvantage to producers from low-wage countries. Consequently, if the level of protection is relaxed, the share of imports would increase.

The domestic industry has made significant strides in introducing new products, increasing productivity, and decreasing their costs. More than the MFA, these factors were critical to the industry's relative success during the 1970s. Technological progress, however, is not limited to developed nations. Other countries have acquired the machinery and expertise to increase the quality of their products and lower their costs. In addition, improvements in communication, transportation, and finance have lowered the cost of developing foreign sources of supply.

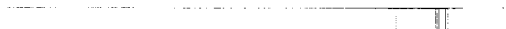
The growth in imports of textile products was undoubtedly given a substantial boost by the rapid appreciation of the dollar between 1980 and 1984.

With its decline, the competitive pressures on domestic firms will undoubtedly ease somewhat. Nevertheless, a technology is not currently available to erase the existing cost differential between domestic apparel producers and those in developing countries. In fact, domestic producers are increasingly adopting practices that make the most of their principal advantage--proximity to buyers. Textile manufacturers are shortening production runs so that they can be more responsive to changes in demand and tastes.<sup>24/</sup> In addition, domestic textile and apparel firms are developing closer relations so that they can more quickly respond to orders from retailers who can thereby reduce their inventories. Moreover, a number of mergers have taken place in the industry as domestic firms attempt to achieve multiplant economies.<sup>25/</sup>

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24. See "Holding its salvation in its own hands," *The Economist* (April 5, 1986), pp. 79-82; also see "Textiles Get Competitive," *National Journal* (June 7, 1986), pp. 1360-1365.

25. See "Textile Companies Rapidly Stake Out Niches," *The Wall Street Journal*, February 5, 1986, p.6.



## CHAPTER III

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### STEEL

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On three separate occasions, the U.S. government has provided the domestic steel industry with protection from import competition. In the late 1960s, the United States negotiated voluntary restraint agreements with Japan and the European Economic Community. In the late 1970s, in response to a rash of dumping complaints, the United States introduced a trigger price mechanism that subjected countries that sold steel below specified levels to accelerated dumping investigations. In 1984, after the International Trade Commission concluded that the industry had been injured by import competition, the Reagan Administration negotiated voluntary restraint agreements with a number of steel exporting countries.

Accompanying all three cases was the hope that protection would give the industry the time and resources to compete more effectively with foreign producers. Clearly, the first two episodes of protection did not achieve this goal. Without protection, the share of imports grew, and the industry was ultimately able to secure additional relief. Since the latest round of protection is still in its early stages, it is premature to determine its effects.

By increasing profits, protection is supposed to provide an industry with the resources needed to modernize. Neither the voluntary restraint agreements nor the trigger price mechanism, however, increased industry's profits by much above what they had been before the steel measures had been imposed. Moreover, given the sources of the industry's cost disadvantage, it is doubtful that higher investment would have substantially increased the industry's competitiveness.

#### TRACING THE COMPETITIVE STATUS OF THE DOMESTIC STEEL INDUSTRY

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Historically, the steel industry was one of the most profitable sectors of the American economy. Its market structure was shaped by a series of mergers in the late nineteenth century that, among other things, created the United

States Steel Corporation.<sup>1/</sup> At first, U.S. Steel accounted for 65 percent of the industry's production, but it gradually ceded the bulk of its market share to other domestic producers. By 1960, its market share had declined to 28 percent. Nevertheless, through much of this period, it was widely acknowledged to have orchestrated pricing in the industry, and steel manufacturing was among the most profitable sectors of the economy.

The fortunes of the industry declined as domestic steel consumption stopped rising and imports expanded. In fact, since the mid-1970s, steel consumption has fallen not only in the United States but in most other developed nations as well. This decline in consumption in the developed nations resulted from a variety of factors including (1) reduced infrastructure construction, (2) increased role of services, and (3) greater use of substitute materials such as plastics and aluminum.<sup>2/</sup> Imports had been a negligible factor in the domestic market during the 1950s, but they accounted for more than 25 percent of domestic consumption in 1984. Their share declined in 1985, largely because of the most recent episode of protection.

The key to the success of the foreign producers has been their lower costs, most notably lower wages. One study estimated that in 1984 the cost of manufacturing cold rolled carbon steel was 28 percent higher in the United States than in Japan and 20 percent higher than in Brazil.<sup>3/</sup> Labor costs accounted for the bulk of the cost differential, though foreign producers also had significantly lower costs of raw materials. Since production facilities in the United States are older, the capital costs (which include profits, interest, and depreciation) of manufacturing steel in domestic plants

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1. U.S. Steel, which acquired several oil companies in the 1980s, changed its name to USX in 1986.
  2. For a discussion of this issue, see David Tarr, "Steel Crisis in the United States and the European Community: Causes and Adjustments," presented at a conference on Europe-United States Trade Relations, sponsored by the Centre for European Policy Studies and the National Bureau of Economic Research, and to be included in a forthcoming conference proceeding edited by Robert Baldwin and others.
  3. These calculations assume that the plants are operating at 90 percent of capacity. Japanese steel manufacturers operate at a higher rate operating rate; when costs are compared using the actual operating rates, the cost differences will be even greater. See Robert W. Crandall, "Rationalizing the U.S. Carbon Steel Industry: A Critical Perspective," in Gary Hufbauer and Howard Rosen, eds., *Domestic Adjustment and Escape Clause Relief* (Washington, D.C.: Institute for International Economics, forthcoming.) Also see International Trade Commission, *Foreign Industrial Targeting and its Effects on U.S. Industries, Phase I: Japan*, Publication 1437 (Washington, D.C.: ITC, October 1983), p. 197.



are significantly lower. In 1982, domestic labor productivity was lower than it was in the Japanese industry.<sup>4/</sup> Other studies have come to similar conclusions about the differences in costs between United States and Japanese producers.<sup>5/</sup>

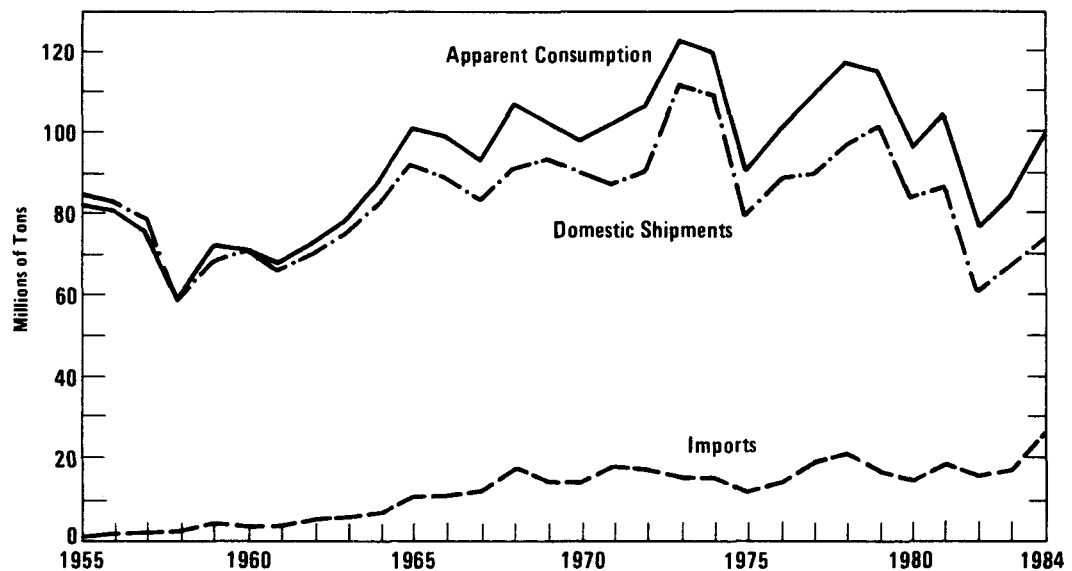
While the production costs of domestic integrated steel manufacturers exceed those of efficient foreign producers, domestic nonintegrated steel producers, or minimills do not have higher costs than foreign producers with similar facilities. In addition to semi-finished and finished steel products, an integrated steel mill makes raw steel from iron ore and coke. Other steel-making facilities, most notably minimills, do not produce pig iron but use scrap to make a narrower range of steel products. Consequently, minimills can operate efficiently at a relatively small scale, and they are often built to serve the needs of a particular local market. Finally, because of lower wage rates and more flexible work rules, their labor costs are substantially lower than those of integrated producers. Despite the decline in domestic steel consumption, the share of domestic steel production by minimills has increased from 3 percent in 1960 to 20 percent in 1980.<sup>6/</sup> In addition, they have been more profitable than the integrated producers.<sup>7/</sup> Since the primary impetus for trade protection has been to aid the integrated producers, however, this analysis will focus on that sector of the industry.

### Labor Costs

Ironically, imports have contributed to the relatively high wages in the steel industry. Imports more than doubled in 1959, when domestic steel production was dramatically reduced by a four-month strike (see Figure 7). In 1965, 1968, and 1971 (all contract expiration years), steel users stockpiled

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4. Unpublished data of the Bureau of Labor Statistics, Department of Labor.
  5. See Congressional Budget Office, *The Effects of Import Quotas on the Steel Industry* (July 1984), pp. 21-29. Also see National Academy of Engineering, *The Competitive Status of the U.S. Steel Industry* (Washington, D.C.: National Academy Press, 1985), pp. 46-80.
  6. See Congressional Budget Office, *The Effects of Import Quotas on the Steel Industry*, p. 6.
  7. See Congressional Budget Office, *The Effects of Import Quotas on the Steel Industry*, p. 29. Also see David G. Tarr, "Does Protection Really Protect?" in *Regulation* (November 1985), p. 32.

Figure 7.  
Apparent Domestic Steel Consumption



SOURCE: Congressional Budget Office based on data supplied by Department of Commerce.

steel in anticipation of strikes.<sup>8/</sup> To end this practice, the industry and their unions reached an innovative agreement in 1973. In return for a pledge not to strike, the steel firms agreed to increase wages by 3 percent per year plus an additional amount tied to changes in the cost of living. The parties further agreed to submit any remaining collective bargaining issues to binding arbitration. While the agreement ended the threat of industry-wide strikes, it also escalated steelworkers' wages and exacerbated the industry's cost disadvantage.

During the 1960s, the hourly wage rates of domestic steel workers was about 35 percent higher than the average for employees in all other manufacturing. By 1982, this differential had increased to more than 65 percent (see Table 4). Because of subsequent wage concessions, the differential had fallen to less than 50 percent by 1984. The average hourly wage for mem-

8. In 1965, the quantity of steel imported increased by 61 percent; in 1968 by 57 percent; and in 1971 by 37 percent. In all three years, the increase in imports was substantially greater than the increase in domestic production.

TABLE 4. EMPLOYMENT AND WAGES IN THE STEEL INDUSTRY

Year	Employment (In thousands)	Average Hourly Wages (In current dollars)		Ratio of Steel to All Manufacturing
		Steel	Manufac- turing	
1965	657	3.46	2.61	1.32
1966	652	3.58	2.71	1.32
1967	635	3.62	2.82	1.28
1968	636	3.82	3.01	1.27
1969	644	4.09	3.19	1.28
1970	627	4.22	3.35	1.26
1971	574	4.60	3.57	1.29
1972	568	5.16	3.82	1.35
1973	605	5.61	4.09	1.37
1974	609	6.41	4.42	1.45
1975	548	7.13	4.83	1.48
1976	549	7.79	5.22	1.49
1977	554	8.59	5.68	1.51
1978	561	9.70	6.17	1.57
1979	571	10.78	6.70	1.61
1980	512	11.86	7.28	1.63
1981	506	13.13	7.99	1.64
1982	396	14.00	8.50	1.65
1983	341	13.42	8.83	1.52
1984	334	13.53	9.10	1.47

SOURCE: Congressional Budget Office and Bureau of Labor Statistics, Department of Labor.

bers of the American Iron and Steel Institute, which consists of the bulk of the integrated producers, was 95 percent higher than for all manufacturing industries in 1982. <sup>9/</sup>

When expressed as a percentage of hourly compensation, which includes such things as paid vacations and employer contributions to health insurance and pension funds, the premium that steel workers receive over others is even greater. Using this measure, steel workers received 97 percent more than the average worker in 1982 and 63 percent more in 1984. With the exception of Japan, the differential between the hourly compensation of steel workers and manufacturing employees remains greater in the United States than in other countries. <sup>10/</sup> The hourly compensation of domestic steelworkers, however, was 80 percent higher than for steel workers in Japan. <sup>11/</sup>

#### Production Facilities

The steel industry's relatively high wages are not the sole source of its competitive problems. In contrast to many foreign producers, the United States has relatively old production facilities. Only one new integrated steel plant has been built in the United States since the 1950s--Bethlehem Steel's Burns Harbor facility, which was completed in the late 1960s. <sup>12/</sup> Since the 1950s, a number of innovations have increased the efficiency of steel production, and U.S. producers have modified or retrofitted their steel plants to incorporate many of them. The vast majority of domestic integrated steel facilities originally used open-hearth furnaces to make steel. Basic oxygen furnaces proved to be far more efficient, and they have been installed in virtually all domestic plants. Other significant innovations, which have been less widely adopted by domestic manufacturers, include continuous casting and automated process controls. For the most part,

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9. See *Annual Statistical Report 1983* (Washington, D.C.: American Iron and Steel Institute, 1984).
  10. This conclusion is based on unpublished Bureau of Labor Statistics data. The compensation for Japanese steelworkers was 73 percent higher than it was for workers in all manufacturing. The premium for steelworkers compared with workers in all manufacturing was 35 percent in Canada and less than 10 percent in Germany.
  11. This calculation is based on a 1984 exchange rate of 237 yen to the dollar.
  12. See Robert Crandall, *The U.S. Steel Industry in Recurrent Crisis: Policy Options in a Competitive World* (Washington, D.C.: The Brookings Institution, 1981), p. 74.

however, a plant that has been designed and built around these innovations (a so-called greenfield plant) will be more efficient than a plant that is retrofitted.

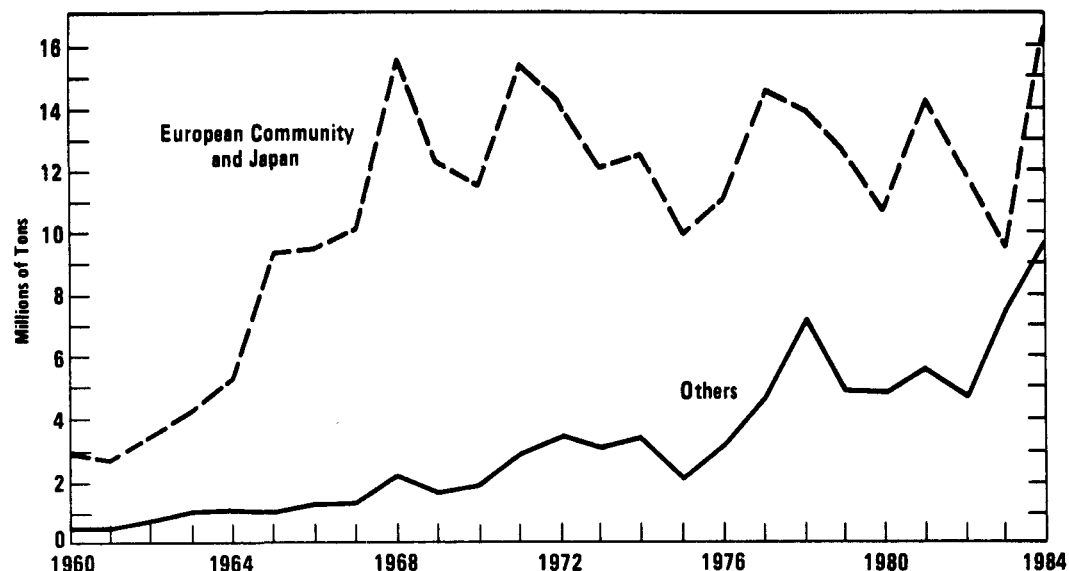
Japan and members of the European Common Market were largely responsible for the initial runup in imports during the 1960s. Since then, increased imports have largely come from other sources, including newly industrializing countries such as Brazil, Korea, and Mexico (see Figure 8). These countries are developing their manufacturing industries and their infrastructures, which are steel-intensive activities, and they have constructed new facilities, in part, to support these efforts. Unlike the developed countries, per capita steel consumption is increasing in these nations as their economies expand. The prestige that some nations attach to being a major steel producer may have also played a role in their investment decisions. The technology necessary to build an efficient steel facility can be readily acquired, and the steel output of developing countries has doubled since 1973.<sup>13/</sup> Since 1970, Japan, Canada, Britain, and France have also begun construction (in some cases with government assistance) of new integrated facilities. There are substantial economies of scale in manufacturing steel, and many of these newer facilities are quite large.<sup>14/</sup> For example, in 1982, only 21.5 percent of U.S. capacity was in plants that exceeded 5 million tons; in Japan almost 65 percent of its capacity was in plants that were that large.<sup>15/</sup>

### Raw Materials

Historically, the United States enjoyed an international competitive advantage in its access to abundant supplies of relatively high-quality iron ore deposits. Domestic producers, however, have now lost this advantage because their sources of easily mined, high-quality ore have been depleted, and other sources outside North America have been developed. Most integrated steel facilities are located in the interior of the United States, and the relatively high cost of inland transportation limits their ability to use

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13. See Robert Crandall, "Rationalizing the U.S. Carbon Steel Industry," p. 4. See also *Costs and Benefits of Protection*, Organization for Economic Cooperation and Development (Paris: OECD, 1985), p. 64. The construction of a steel plant is a labor-intensive process. Since their labor costs are lower than in the U.S., developing countries have a cost advantage in building steel plants.
  14. See Crandall, *The U.S. Steel Industry in Recurrent Crisis*, pp 11-14.
  15. See Donald Barnett and Louis Schorsch, *Steel: Upheaval in a Basic Industry* (Cambridge: Ballinger, 1983), p. 58.

Figure 8.  
Steel Imports by Country



SOURCE: Congressional Budget Office based on data supplied by Department of Commerce.

these sources economically. Most newer foreign steel mills are located near deep water ocean ports and do not suffer similar cost penalties. Iron ore represents roughly 15 percent of the total costs of producing a ton of steel, and U.S. producers paid almost 50 percent more per ton than Japanese producers in 1984.<sup>16/</sup> By contrast, in 1964, the cost of iron ore to domestic U.S. producers was about 7 percent less than to Japanese manufacturers. Domestic manufacturers continue to have a cost advantage vis-a-vis the Japanese producers with respect to coking coal; this advantage, however, has declined over time. In 1964, domestic manufacturers paid 35 percent less than the Japanese, while in 1984 they paid 16 percent less.

#### PROTECTING THE INDUSTRY FROM INTERNATIONAL COMPETITION

For protection to improve the international competitiveness of a domestic industry, it must encourage the industry to reduce its costs. Generally, this

16. These cost comparisons are discussed in Congressional Budget Office, *The Effects of Import Quotas on the Steel Industry*, p. 24.

requires that domestic manufacturers invest in new technologies. Protection, by increasing the profitability of domestic firms, is supposed to make such investments more profitable. With prevailing wage rates and raw material costs, however, it is questionable whether significant segments of the industry could produce steel as cheaply as efficient foreign firms even if they had more modern facilities. In addition, the decline in domestic consumption reduces the incentives of firms to make such investments. <sup>17/</sup>

Such a state of affairs is clearly at odds with the premise that short-term protection can fundamentally change the long-term competitive standing of the industry. Neither the voluntary restraint agreements (VRAs) nor the trigger price mechanism, however, increased profits much above what they had been before the restraints were imposed.

### The Voluntary Restraint Agreements

During the 1960s, steel imports accelerated. By 1968, they accounted for almost 16 percent of the U.S. consumption. Although domestic production had increased in the early part of the 1960s, it had leveled out by the middle of the decade. In addition, domestic steel prices and industry profits, both adjusted for inflation, began to decline.

Concerns about the influx of imported steel invoked calls for protection. In 1968, a bill was introduced in the Congress to limit steel imports to 9.6 percent of the domestic market, which was their average share between 1964 and 1966. Steel imports would have been more than 45 percent lower in 1968 if the proposed quotas had been in effect. Since there was substantial support for some type of trade restraint, the Johnson Administration was able to negotiate voluntary restraint agreements with both Japan and the European Economic Community (EEC). Specifically, each agreed to reduce exports to 5.75 million tons in 1969; both Japanese and EEC exports to the United States had exceeded 7 million tons in 1968. Under the agreement, exports were permitted to grow by 5 percent annually in each of the next two years.

In 1972, the VRAs were extended for an additional three years with several amendments. The United Kingdom joined the group of restrained countries, and the revised agreements contained limits for particular types of steel. Since the initial agreements only covered aggregate imports,

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17. For a discussion of the costs and profitability of modernizing the domestic steel industry, see Robert Crandall, *The U.S. Steel Industry in Recurrent Crisis*, pp. 81-88.

foreign suppliers shifted their mix toward higher valued products. For example, imports of stainless and alloyed steels increased in the first three years of the agreement. There was also a discernable shift of imports from hot rolled carbon steel to cold rolled carbon steel. (Cold rolled steel requires additional processing and therefore is more costly to manufacture than hot rolled steel and commands a higher price).

Quantity of Imports. While the quotas reduced imports from the restrained countries in some of the years, their overall impact was limited by three factors: stockpiling in the year before the quotas were imposed, the recession of 1970, and the world steel boom that began in 1972.

In 1969, the first year of the VRAs, imports declined by more than 20 percent. Several factors suggest, however, that the quotas were not the major reason for the decline. First, European imports were 10 percent below their quota limit. In addition, imports from unconstrained sources fell by 17 percent. When quotas restrict imports from some countries but not others, firms in unconstrained countries can be expected to increase their exports. Domestic production, however, increased by 2 percent and the imported share of apparent supply fell from 16.7 percent to 13.7 percent. The sharp decline in overall imports was probably the result of steel consumers reducing their steel inventories. In 1968, domestic consumers had increased their purchases of imported steel by 57 percent, partly in anticipation of a strike that never occurred (the possibility that quotas would be imposed may also have contributed to the stockpiling).

In 1970, the economy entered a recession, which resulted in a 5 percent reduction in imports and a 3.4 percent reduction in domestic production. Imports from both Japan and the EEC declined, and European imports represented less than 20 percent of the quota amounts. Imports from unconstrained sources, however, increased.

In 1971, as the economy recovered and another labor contract expired, imports rebounded strongly. Shipments from constrained countries rose by 30 percent, as both the EEC and Japan used unfilled quotas from previous years, which was permitted under the agreements. Imports from other sources increased by 58 percent, but still accounted for only 23 percent of imports. (They had accounted for 20 percent of imports in 1968, the year before the VRAs began.) The increase in imports exceeded the increase in consumption, and domestic production declined as a result. Despite this decline, the restraint agreements probably provided their greatest degree of protection during this year; the emerging world-wide steel boom and domestic price controls soon made them largely superfluous. With demand grow-